

Psychosocial Work Environment and Depression: Epidemiologic Assessment of the Demand–Control Model

ABSTRACT

Objectives. This study examined the relation between occupational variables and 3 forms of depression (major depressive episode, depressive syndrome, and dysphoria). It was hypothesized that individuals working in occupations with high psychologic strain (high psychologic demands and low decision authority) would have a higher prevalence of depression relative to those working in occupations with the other 3 possible conditions.

Methods. The analysis was based on data for 905 respondents who were employed full-time in the year before the follow-up interview for the Epidemiologic Catchment Area Program in Baltimore, Md, between 1993 and 1996. Psychosocial work environment, socio-demographic variables, and psychopathology were assessed in a household interview that included the National Institute of Mental Health Diagnostic Interview Schedule. Subscales for the demand–control model for psychosocial work environment were modified slightly after factor analysis.

Results. High job strain was associated with greater prevalence of all 3 forms of depression, especially major depressive episode. The results were stronger for women; for men, being unmarried was the strongest prevalence correlate.

Conclusions. Major depressive episode, depressive syndrome, and dysphoria are strongly associated with the psychosocial dimensions of the demand–control model. (*Am J Public Health.* 2000;90:1765–1770)

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Empirical evidence has so far linked depression to certain occupations^{1–3} and their imputed job characteristics⁴ or to occupation and socioeconomic status.^{5–7} However, the demand–control model developed by Karasek⁸ has, except in the initial study in 1979, not been used to describe the association between working conditions and depression in a sample drawn from the general population. Data from the Baltimore Epidemiologic Catchment Area Follow-Up, besides representing a wide range of occupations, provide diagnostic-style measures for 3 different conditions of depression.

The demand–control model has contributed to the study of occupational stress by providing a theoretical framework to explain the relation between the psychosocial characteristics of the work environment and health outcomes.^{8,9} It comprises 2 basic dimensions—decision latitude and psychologic demands—that predict a broad range of health and behavioral outcomes.¹⁰

Decision latitude consists of 2 theoretically distinct concepts, skill discretion and decision authority, that are often combined for analysis. Skill discretion describes the degree to which the job involves the development of an individual's special abilities. Decision authority incorporates an individual's ability to make decisions about his or her job and to influence the work group or company policy or both. The psychologic demands dimension refers to whether there is enough time to get the job done, the amount of work, and the presence of conflicting demands.^{8,9}

For this study, the demand–control model was expanded to include 2 additional dimensions, hazardous work environment and physical demands, in line with concerns for occupational safety and health and consistent with prior analyses of the dimensions of the psychosocial work environment.⁴ Hazardous conditions are usually associated with injuries, but they present psychologic risks also.⁶

The analysis had 2 goals: (1) to examine via a factor analysis whether the dimensions of

the demand–control model hold true and (2) to estimate the association between the dimensions from the demand–control model and depression in logistic regression models adjusted for possible confounding etiologic factors, such as socioeconomic and demographic variables, as suggested by Karasek and Theorell.⁹

Regarding the first goal, exploratory analyses found that only decision authority, one of the components of decision latitude, was indeed related to depression in a meaningful way. This is apparently a situation in which the external construct validity of a concept (e.g., marked by the strong relation to depression) conflicts with the internal construct validity (e.g., the factor analysis). Our focus on the 2 subcomponents in effect favors the external validity, because it is relatively easy for the total variance of a group of items to mask an important construct and because it is possible, theoretically, for external validity to be used to guide efforts at prevention.

Because of these considerations, this report is organized around the following working hypotheses:

1. Decision authority will have a stronger association with depression than other dimensions of the demand–control model.
2. The association between decision latitude and the 3 forms of depression will be stronger with increasing severity of depression.

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3. High psychologic job strain will be associated with an increased prevalence of depression.

Previous epidemiologic analyses have shown a relation between various sociodemographic variables and depression.¹¹ Because these variables (age, educational level, marital status, race, and socioeconomic status) also might be associated with job environment, we adjusted for them in the analyses. Because previous studies on occupational stress and mental health indicated sex differences,¹²⁻¹⁶ we examined the third hypothesis for the whole group of respondents and for men and women separately.

Methods

Sampling and Response

The target population at baseline was 175 211 adult household residents of east Baltimore, Md, which formed 1 site of the National Institute of Mental Health Epidemiologic Catchment Area Program.^{17,18} In 1981, 4238 residents were probabilistically designated; 3481 (82%) completed interviews. These 3481 residents were the target for follow-up in 1993.¹⁹ The median time between baseline and follow-up interviews was 12.6 years. At follow-up, 848 respondents had died, 145 individuals refused to participate, 153 respondents could not complete full interviews, and the address of 415 individuals from the baseline sample of 3481 could not be established.²⁰ Thus, approximately 73% (1920 of 2633) of those alive were interviewed. The analysis was based on the 905 respondents in the follow-up who were employed full-time in the year of the follow-up interview.

Measure of Occupational Stress

The items used to measure the occupational environment were congruent with items from the Quality of Employment Surveys that were originally used in constructing the dimensions of psychologic demand, physical demand, decision authority, skill discretion, and hazardous work environment of the demand-control model.⁸ Two items were added in the Baltimore Epidemiologic Catchment Area data about exposure to cigarette smoke and unwanted sexual advances. A principal component analysis of these items suggested a 4-factor solution. All items were retained for a varimax rotation.

Factor 1 consisted of items related to hazardous working conditions and toxic exposure, explaining 24.7% of the variance (see Table 1). The question about exposure to cigarette smoke

and unwanted sexual advances loaded unequivocally on this factor.

Factor 2 (explaining 12.7% of the variance) is best described by the decision latitude dimension of the demand-control model with the 2 subscales "skill discretion" and "decision authority." However, the "skill discretion" dimension consisted of only 5 instead of the usual 6 items (see Table 1). The "decision authority" dimension was measured by 3 items (see Table 1).

Factor 3 consisted of items related to physical demands, and it explained 7.7% of the variance. It included the physical exertion subscale from the model, measured by 3 items, and 1 item from the physical isometric loads scale. Two items that are normally found among psychologic demands—"working very hard" and "working very fast"—loaded highest on factor 3 physical demands. "Repetitiveness of work" also loaded on factor 3; this item moved from the skill discretion subscale to physical demands. Most items loaded unequivocally on this factor, except that "having to move or lift very heavy objects" also had a relatively high loading on hazardous working conditions (factor 1). "Working long periods with body in physically awkward positions" also had an almost equally high loading on "hazardous working conditions" (see Table 1). "Repetitiveness of work" also had a relatively high loading on "psychologic demands" but not on "skill discretion" (decision latitude, factor 2), where it was originally situated in the demand-control model.

Factor 4, psychologic demands, is measured by 3 items and explains 5.9% of the variance (see Table 1). All 3 items have a uniformly high loading on this factor but none on the other 3 factors.

The factor analysis of occupational stress variables confirmed the general structure of the demand-control model, but certain items were distributed somewhat differently along the dimensions of the model. Although the decision latitude dimension formed a cogent factor, analyses found that it was unrelated to depression. Thus, 5 job scales were formed by adding the response values of items that loaded together on 1 factor; the 5 scales were hazardous work environment, skill discretion, decision authority, physical demand, and psychologic demand. These scales have good internal consistency reliability (Cronbach α coefficients of 0.90, 0.76, 0.71, 0.71, and 0.61, respectively). Dichotomies for these scales were defined by the median split, yielding high and low values for each scale.

At the beginning, we examined all 5 scales in a logistic regression analysis. In further analyses, we entered high job strain, a measure composed of high psychologic or physical demand and low decision authority, and com-

pared it with the other 3 cells in the design. High job strain was then used instead of the individual scales.

Measurement of Depression

Data were collected in accordance with the National Institute of Mental Health Diagnostic Interview Schedule (DIS),^{21,22} which is based on the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R)*.²³ The DIS, a structured interview schedule, was administered by highly trained lay interviewers. Three different forms of depression (major depressive episode, depressive syndrome, and dysphoria) were assessed. To meet the diagnostic criteria for major depressive episode, an individual must report symptoms that endured for 2 weeks or more in at least 5 of 9 groups: sadness; change in appetite; change in sleep patterns; fatigue; slowing of bodily movements or of thought; feeling worthless or sinful; loss of pleasure in something usually enjoyed; difficulty concentrating; and suicidal thoughts, desires, or attempts. One of the symptom groups reported must be either sadness or loss of interest. Depressive syndrome is defined in the same way as major depressive episode except that the syndrome may have as few as 3 symptoms. Dysphoria is characterized by feeling sad, blue, or depressed nearly every day for 2 weeks or more.

Sociodemographic Variables

Sociodemographic variables included in the analysis were sex, age, race, marital status, educational level, and a percentile ranking of the respondent's occupation, categorized in detailed census categories called the NAM index (Nam-Powers-Terrie Occupational Status Scores). The ranks are estimated with national data on the educational attainment and income of persons with that occupation.²⁴

Statistical Analysis

After descriptive analysis, logistic regression models in a backward elimination procedure were used to estimate the degree of association between factors from the psychosocial work environment and the 3 forms of depression. A forward stepwise procedure yielded identical results. These analyses included controls for sociodemographic variables. Because sex differences were expected, the final set of analyses was performed for the whole group of full-time employed respondents and for men and women separately.

TABLE 1—Factor Analysis Dimensions of the Work Environment (Varimax Rotation)

	Factor Loading			
	Factor 1: Hazardous Work	Factor 2: Control	Factor 3: Physical Demand	Factor 4: Psychologic Demand
1. My job exposes me to dangerous work methods.	.82	-.09	.10	.01
2. My job exposes me to dangerous tools, machinery, or equipment.	.82	-.03	.14	.04
3. My job exposes me to things placed or stored dangerously.	.82	-.11	.06	-.01
4. My job exposes me to fire, burns, or shocks.	.81	-.02	.07	.08
5. My job exposes me to dangerous chemicals.	.78	-.07	.07	-.03
6. My job exposes me to air pollution from dusts, smoke, gas, fumes, fibers, or other things.	.76	-.03	.07	-.01
7. My job exposes me to excessive noise.	.72	-.07	.15	-.01
8. My job exposes me to the risk of catching diseases on the job.	.55	-.02	.02	-.16
9. My job exposes me to other people's cigarette smoke.	.51	-.14	.08	.11
10. My job exposes me to unwanted sexual advances.	.49	-.21	.01	-.05
11. I have an opportunity to develop my own special abilities (<i>skill discretion</i>).	-.09	.78	-.01	.10
12. My job allows me to make a lot of decisions on my own (<i>decision authority</i>).	-.08	.72	-.01	-.04
13. I have a lot to say about what happens on my job (<i>decision authority</i>).	-.08	.72	.02	.17
14. My job requires a high level of skill (<i>skill discretion</i>).	-.05	.69	.04	-.18
15. My job requires me to be creative (<i>skill discretion</i>).	-.04	.68	.02	-.11
16. I get to do a variety of different things on my job (<i>skill discretion</i>).	-.09	.64	.03	.03
17. On my job, I have very little freedom to decide how I do my work (<i>decision authority</i>).	.17	-.55	.21	-.15
18. My job requires that I learn new things (<i>skill discretion</i>).	-.09	.51	.07	-.28
19. My job requires lots of physical effort.	.29	.04	.77	.04
20. My work requires rapid and continuous physical activity.	.35	-.18	.74	.11
21. I am often required to move or lift very heavy objects on my job.	.43	-.13	.57	.21
22. My job requires working very hard.	-.13	.32	.56	-.33
23. My job requires working very fast.	-.07	.19	.53	-.32
24. I am often required to work for long periods with my body in physically awkward positions.	.49	-.15	.49	.05
25. My job involves a lot of repetitive work.	-.01	-.02	.28	-.22
26. I have enough time to get the job done.	-.01	.02	-.02	.72
27. I am free from conflicting demands that others make.	-.01	-.02	.07	.69
28. I am not asked to do an excessive amount of work.	-.04	-.00	-.17	.65

Note. In each column, factor loadings in boldface were grouped together in the analysis as a single factor.

Results

Description of the Sample

The frequency distribution for the demographic characteristics of the sample population is presented in Table 2, where the percentages refer to 905 respondents who were employed full-time during the year before the follow-up interview. Fifteen respondents were older than 65 years. There were somewhat fewer men (44.5%) than women (55.5%) in the sample. Nearly 26% of the respondents had earned no more than a high school diploma; almost 57% of the respondents were married. For further analysis, respondents who were never married or were separated, divorced, or widowed were grouped together as "not married." Race was grouped as White (61.9%) and not White (48.1%). Diagnosis of depression was not avail-

able for 20 respondents because of incomplete answers in that section of the interview (see Table 2). The frequency of occurrence of depression was about 2 to 3 times higher for women for depressive syndrome and dysphoria. Of the 23 individuals who received diagnoses of major depressive episode in the year before the interview, 78% were female.

Logistic Regression Analyses

Decision authority had the strongest relation to the 3 forms of depression (Table 3). Psychologic demand showed a trend for major depressive episode and depressive syndrome, and physical demand showed a trend for all 3 forms of depression but did not produce significant odds ratios. Hazardous working conditions was eliminated from the models because its *P* value was above the cutpoint of

P = .20 for all 3 forms of depression. Hazardous working conditions also was tested as the only independent variable in the logistic regression models with the 3 forms of depression and was found to have no association with depression (major depressive episode: $\chi^2 = 0.434$, *P* = .5098; depressive syndrome: $\chi^2 = 0.200$, *P* = .6549; and dysphoria: $\chi^2 = 0.003$, *P* = .9552). Skill discretion played a marginal role for major depressive episode in the model but none for depressive syndrome and dysphoria.

The second hypothesis—that the association between decision latitude and depression is strongest with increasing severity of depression—was not confirmed (for major depressive episode, the χ^2 for high psychologic job strain when decision latitude was used as a parameter instead of decision authority was 3.708, *P* = .0542; for depressive syndrome, $\chi^2 = 0.377$, *P* = .5392; and for dysphoria,

TABLE 2—Sociodemographic Characteristics and Prevalence of Depression, Identified With Diagnostic Interview Schedule (N=905)^a

	No. (%)
Age, y	
27–44	554 (61.2)
45–82	351 (38.8)
Sex	
Male	403 (44.5)
Female	502 (55.5)
Race	
African American	315 (34.8)
Asian American	7 (0.8)
Hispanic American	10 (1.1)
White	560 (61.9)
Missing	13 (1.4)
Educational level, years of schooling	
≤7	18 (2.0)
8	27 (3.0)
9–11	188 (20.8)
12	362 (40.0)
13–15	183 (20.2)
≥16	127 (14.0)
Marital status	
Married	515 (56.9)
Widowed	43 (4.8)
Separated	70 (7.7)
Divorced	139 (15.4)
Never married	138 (15.2)
Depressive disorder within year before interview	
Major depressive episode	23 (2.5)
Depressive syndrome	48 (5.3)
Dysphoria	69 (7.6)
Diagnosis of 1 of the listed forms of depression more than 1 year before the interview	197 (21.8)
No disorder	548 (60.6)
Missing diagnostic data	20 (2.2)

^aPercentages are based on respondents employed full-time in the year before the interview of the Baltimore Epidemiologic Catchment Area Follow-Up.

logic demand or physical demand and low decision authority vs a zero for the 3 other possible combinations. Six models were tested, 3 for psychologic job strain and 3 for physical job strain.

High psychologic job strain was associated with a significant increase in prevalence of all 3 forms of depression and increased odds ratios for the more severe forms of depression (major depressive episode: odds ratio [OR]=6.24, 95% confidence interval [CI]=2.44, 14.92, $P=.0001$; depressive syndrome: OR=3.44, 95% CI=1.61, 6.85, $P=.0007$; dysphoria: OR=2.41, 95% CI=1.18, 4.57, $P=.0102$). A consolidated analysis with interaction terms for sex-by-psychologic job strain produced a significant interaction effect only for major depressive disorder as the outcome variable ($F=4.33$, $P=.0377$). This effect likely was because (1) only 22% of those who had major depressive disorder were men and (2) women were 7 times more likely than men to experience high psychologic job strain in this condition. A stratification by sex showed that high psychologic job strain was important for women only in the association with depression (major depressive disorder: OR=6.18, 95% CI=2.18, 16.51, $P=.0008$; depressive syndrome: OR=3.46, 95% CI=1.45, 7.65, $P=.0031$; dysphoria: OR=2.25, 95% CI=1.01, 4.65, $P=.0362$). As for the whole group of respondents, the association with depression was stronger with the more severe forms of depression. For men, high psychologic job strain did not produce significant results.

When high job strain was characterized by high physical demand and low decision authority, the odds ratio was also appreciably different from 1.0 for the group of respondents as a whole. Overall, there was a positive gradient for higher odds ratios with the more severe forms of depression (major depressive episode: OR=3.88, 95% CI=1.37, 9.67, $P=.0057$; depressive syndrome: OR=2.86, 95% CI=1.30, 5.78, $P=.0052$; dysphoria: OR=1.79, 95% CI=0.83, 3.52, $P=.1080$).

For women, the association for major depressive episode was stronger than the association for depressive syndrome and dysphoria. There was, as for the whole group, a positive gradient for higher odds ratios with the more severe forms of depression (major depressive episode: OR=4.14, 95% CI=1.28, 11.62, $P=.0099$; depressive syndrome: OR=2.69, 95% CI=1.03, 6.27, $P=.0293$; dysphoria: OR=not significant). However, for men, the association was stronger with dysphoria than with depressive syndrome (major depressive episode: OR=not significant; depressive syndrome: OR=3.14, 95% CI=0.68, 10.70, $P=.0913$; dysphoria: OR=3.64, 95% CI=0.98, 11.04, $P=.0320$).

TABLE 3—Unadjusted Association Between the Individual Factors of the Demand-Control Model and Depression^a

Type of Depression	Stress Factors	OR (95% CI)	P
Major depressive episode	Decision authority	0.20 (0.08, 0.51)	.0007
	Psychologic demands	2.29 (0.96, 5.87)	.0691
	Physical demands	2.24 (0.94, 5.71)	.0769
	Low skill discretion	2.22 (0.85, 6.16)	.1117
Depressive syndrome	Decision authority	0.40 (0.22, 0.74)	.0027
	Physical demands	1.65 (0.91, 3.04)	.1013
	Psychologic demands	1.62 (0.89, 2.97)	.1126
Dysphoria	Decision authority	0.52 (0.31, 0.90)	.0164
	Physical demands	1.42 (0.87, 2.34)	.1599

Note. OR=odds ratio; CI=confidence interval.

^aOdds ratio estimates are based on logistic regression analysis (data for 905 full-time employed respondents from the Baltimore Epidemiologic Catchment Area Follow-Up).

$\chi^2=0.184$, $P=.6681$), because for skill discretion, the association was small and not significant. However, decision authority was the strongest factor in the models and protective against depression. High decision authority was more important as a protective factor for major depressive episode than for depressive

syndrome and more important for depressive syndrome than for dysphoria (see Table 3).

Unadjusted job strain and depression. High job strain was defined as an interaction term of the demand variables and decision authority. The interaction term consisted of a value of 1 for individuals with high psycho-

TABLE 4—Adjusted Association Between High Psychologic Job Strain From the Work Environment, Sociodemographic Factors, and Depression (N = 905)

Type of Depression	Stress Factors	OR (95% CI)	P
Whole group			
Major depressive episode	Psychologic strain	7.16 (2.72, 17.81)	.0001
	Marital status (not married)	2.56 (1.05, 6.50)	.0404
	Race (White)	2.53 (0.98, 7.46)	.0681
	Age (27–44 y)	1.94 (0.77, 5.54)	.1799
Depressive syndrome	Psychologic strain	4.06 (1.85, 8.39)	.0003
	Marital status (not married)	2.59 (1.35, 5.08)	.0045
	Age (27–44 y)	2.43 (1.21, 5.31)	.0176
	Race (White)	1.65 (0.85, 3.33)	.1518
Dysphoria	Marital status (not married)	3.90 (2.21, 7.11)	.0001
	Psychologic strain	3.06 (1.46, 6.04)	.0018
	Race (White)	2.09 (1.18, 3.84)	.0143
Men			
Major depressive episode	Marital status (not married)	8.98 (1.31, 176.61)	.0507
Depressive syndrome	Age (27–44 y)	7.24 (1.40, 132.75)	.0587
	Marital status (not married)	5.60 (1.82, 20.87)	.0045
Dysphoria	Race (White)	4.65 (1.21, 30.73)	.0501
	Marital status (not married)	4.47 (1.57, 13.78)	.0059
	Age (27–44 y)	3.02 (0.91, 13.93)	.1010
	Low education	1.49 (0.95, 2.36)	.0845
Women			
Major depressive episode	Psychologic strain	6.97 (2.39, 19.42)	.0002
	Race (White)	3.07 (1.05, 11.23)	.0574
Depressive syndrome	Psychologic strain	4.10 (1.68, 9.36)	.0011
	Age (27–44 y)	1.71 (0.78, 4.06)	.1993
Dysphoria	Marital status (not married)	3.11 (1.57, 6.50)	.0016
	Psychologic strain	2.88 (1.25, 6.19)	.0088
	Race (White)	1.94 (1.01, 3.85)	.0519

Adjusted association between job strain, sociodemographic variables, and depression. The odds ratio for high psychologic job strain increased considerably after sociodemographic variables were added into the models (see Table 4). High psychologic job strain was highly significant for all 3 forms of depressive disorders and the most important factor in the models for major depressive episode and depressive syndrome. For dysphoria, not being married had the highest and most significant odds ratio, and high psychologic strain was second (see Table 4).

The results indicated a noticeable shift in the importance of sociodemographic variables when the study sample was stratified by sex. Among male respondents, the most important factor for all 3 forms of depression was being married. Being a person of color also had a protective effect against dysphoria among men. In addition, for men, being young was associated with a significant increase in prevalence of depressive syndrome (see Table 4). For women, high psychologic job strain continued to be an important factor. It produced the highest odds ratio for major depressive episode and depressive syndrome, whereas for dysphoria, not being married had a higher odds ratio than high psychologic job strain, although high psychologic job strain was still significant at the .01 level. For women, being White, being young, and not being married also increased the odds

ratio for the association with depression (see Table 4).

For the whole group of respondents, high physical job strain was associated with major depressive episode as the most important factor (OR=4.03, 95% CI=1.38, 10.43, $P=.0060$), followed by marital status, race, and age. Marital status and age had a stronger association with depressive syndrome than did high physical job strain (OR=2.71, 95% CI=1.16, 5.77, $P=.0139$). Only marital status and race had a significant association with dysphoria.

For women, high physical job strain had an association with major depressive episode in the adjusted model (OR=5.17, 95% CI=1.54, 15.45, $P=.0044$), and so did race (being White). For depressive syndrome, high physical job strain was the primary indicator for increased prevalence (OR=2.76, 95% CI=0.97, 6.85, $P=.0388$). No association was found between high physical job strain and dysphoria. The prevalence of dysphoria was influenced only by marital status and race.

For men, a similar pattern emerged for high physical job strain as in the unadjusted models, in that there was only an association with dysphoria (OR=3.85, 95% CI=0.94, 13.43, $P=.0416$). On the other hand, marital status was associated with all 3 forms of depression (OR=8.98, 95% CI=1.31, 176.61, $P=.0507$; OR=5.36, 95% CI=1.73, 20.04, $P=.0058$; OR=4.19, 95% CI=1.45, 13.05,

$P=.0091$, from severe to mild, respectively). Being young was an additional factor for depressive syndrome, and being White and being young were additional factors for dysphoria.

Discussion

A slightly modified demand–control model shows strength in characterizing the association between the psychosocial work environment and the different forms of depression. The strength of the association increased as the definition of depression became more severe.

The items in our factor analysis lined up somewhat differently from the original model. Repetitiveness of work is no longer regarded as lack of skill discretion but rather as physical demand. Working very hard and working very fast, which were originally part of psychologic demand, are now considered physical demands. These changes may be related to the work environment that has emerged since the model was originally formulated or may be related to the occupations that are numerically dominant in Baltimore. The finding from the preliminary analysis that decision latitude was not related to the 3 forms of depression in the logistic regression models led us to explore decision authority and skill discretion as separate variables, contrary to the original model.⁸ Findings from the new analyses showed that skill discretion was not related to depression and that decision authority was an important protective factor in regard to all 3 forms of depression. Decision latitude might therefore be a very valuable construct for other health concerns (such as cardiovascular disease) but not for depression.

When the psychologic job strain variable was tested alone in the logistic regression models, it showed a stronger association with depression compared with decision authority in the earlier models. This confirms research by Karasek and his colleagues, who emphasized that most psychologic job strain is induced by the convergence of high demands and low control (decision latitude)²⁵ rather than by individual conditions alone.

Our analyses suggested that job strain defined by psychologic demand and decision authority affected depression more than did job strain defined by physical demand and decision authority; in addition, intriguing differences by sex were found. Sex-stratified analyses suggested that women seem to be more sensitive to psychologic job strain and might also be more exposed to it in their work environments than men are.

Among men, the association between high physical job strain and dysphoria was stronger than that between high physical job strain and

depressive syndrome; no association between high physical job strain and major depressive episode was found. Men may be more sensitive to and aware of their distress when exposed to high physical job strain. However, in cases of more severe forms of depression, a shift in attention may occur that might make high physical job strain seem less important. For women, on the other hand, high physical job strain might be associated more with endurance than with dysphoria, in contrast to major depressive episode and depressive syndrome, with which high physical job strain was very strongly associated.

In considering these interpretations, it is important to point out some limitations of this study. The cross-sectional nature of the data leaves inferences about the causal direction of the association between the work environment and depression open. Respondents with more severe depressive symptoms may have reported their work situations as more psychologically and physically demanding and perceived less control over their work. Evidence has been provided by other investigators (e.g., Kohn and Schooler²⁶) from longitudinal research that supports the causal direction implied in this study—that is, that work conditions contribute to depressive symptoms. However, to investigate issues of causal direction, future research could either use prospective data or compare the subjective responses regarding the work environment from individuals with and without depression with more objective measures from a job exposure matrix.

An additional limitation of this study was the lack of data on social support in the workplace from supervisors and coworkers. Such data would permit us to test the extent to which social support buffers the negative effects of high psychologic and physical job strain. Third, we were not able to examine personality traits as a possible determinant of depression. Although personality traits are influenced by job conditions,²⁶ they also may influence the choice of certain jobs with high job strain. Some personality traits are potentially associated with the prevalence and incidence of depressive disorders independently of factors from the work environment.

Despite these limitations, we were able to evaluate the relation between occupational strain and depression with population-based data instead of with data from clinic or other selected populations. The results confirm the importance of the demand-control model for depression.

Contributors

H. Mausner-Dorsch analyzed the data and wrote the paper. W. W. Eaton was the principal investigator on the Epidemiologic Catchment Area follow-up and supervised the field methods of the design and questionnaire. Both H. Mausner-Dorsch and W. W. Eaton designed the data analysis.

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